Presented to the Library
by

Royal Colleges of Surgeons

Date 2 February 1949

Class Mark Reece Accession No. 34838
(KYN)
1897

Digitized by the Internet Archive
in 2015

https://archive.org/details/b21361174

THOUGHTS

ON

VACCINATION,

AND

THE CAUSE OF ITS FAILING TO AFFORD

THE SAME

PROTECTION AGAINST VARIOLA,

AS FORMERLY.

BY

JOHN M'GHIE,

SURGEON, ROYAL NAVY, MEMBER OF THE MEDICAL SOCIETY OF DUMFRIES, AND CORRESPONDING MEMBER OF THE CHIRURGICAL SOCIETY OF GENEVA.

SECOND EDITION, ENLARGED.

> "Particular matters of fact are the undoubted foundations on which our civil and natural knowledge is built; the benefit the understanding makes of them, is to draw from them conclusions which may be as standing rules of knowledge, and consequently of practice."

DUMFRIES:
PRINTED AT THE JOURNAL OFFICE, FOR
J. SINCLAIR, DUMFRIES, AND D. LIZARS, EDINBURGH.

1827.

34838

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE
LIBRARY
- 4 FEB 1949

TO

J. WEIR, M. D., AND W. BURNETT, M. D.

MEDICAL COMMISSIONERS

OF HIS MAJESTY'S NAVY,

THE FOLLOWING PAGES

ARE INSCRIBED

WITH SENTIMENTS OF THE GREATEST RESPECT,

BY THEIR

OBEDIENT SERVANT,

THE AUTHOR.

ADVERTISEMENT
TO THE SECOND EDITION.

Since the first Edition of the following Essay was published, the subject of it has been one of increasing interest, in consequence of the numerous cases of Small Pox subsequent to Vaccination, which have occurred of late.

Various and opposite opinions have been offered as to the cause of this unwonted frequency of Variola in the Vaccinated; these, I have very attentively considered, but find in them no satisfactory explanation of the circumstance, and as some of them have been supposed adverse to the sentiments contained in that Essay, I have given these a serious reconsideration, and I now, with due deference to the authorities from whom I differ, submit that, instead of their being subverted by the arguments which have been opposed to them, they derive from some of these additional confirmation, and by none of them do they appear to me to be invalidated. Impressed with this belief, and also with the interests which the question involves, and its *immediate* consequences to society, if my conclusions be correct, I am induced to lay these, with the arguments which are imagined hostile to them, in a more perfect form before the professional reader, and solicit for them a dispassionate consideration; and this I do with less reluctance, from my motive for instituting the inquiry being to search for truth in a matter of infinite moment, and not knowingly to support any favourite, but baseless, theory or speculation. How far I have succeeded in the object of my search, the tribunal to which I appeal will decide. To those from whom I dissent in the discussion, I plead my having given the subject of it a patient and earnest consideration, and upon conviction only of the probable justness of my inferences, do I presume to question the opinions of persons whose talents and professional attainments are deservedly acknowledged and respected; at the same time, I am perfectly sensible, that my own conclusion, respecting the cause of Vaccination failing, is not established by what may be deemed *positive* proof. I have, however, pointed out how this, I conceive, may be obtained by those having the means and opportunity; and if at present, I have done nothing more than adduced satisfactory evidence of *what is not* the cause of the failures, it narrows the ground of investigation, and clears the way to the object we are in quest of.

Dumfries, August 2d, 1827.

PREFACE
TO THE FIRST EDITION.

From the modified Small Pox having appeared in several of the vaccinated in this place, within these few months, I have been led to consider the causes to which imperfect protection after vaccination has been attributed; and, in doing this, it occurred to me, that were it owing to any of those which have yet been assigned, we should, from the attention which has been paid to the obviating of them, find the protection derived from vaccination more perfect than it was in the early period of the practice; particularly as the supposition of its conferring a temporary immunity, only, is negatived by facts, which are from time to time coming under our observation.

Satisfied, therefore, that some circumstance of which we are either ignorant, or to which we have paid no attention, must be the efficient cause of the Cow Pox failing to afford the same security as formerly, I have been stimulated to investigate the subject with care; the result of which investigation is submitted in the annexed Essay. I by no means, however, presume to think that the conclusion at which I have there arrived, is so well established, but that its accuracy may be justly challenged, though I am not acquainted with any facts which are in the slightest degree opposed to it; I have, however, furnished the data from which it is deduced; the value of my arguments, therefore, will be readily estimated, and the legitimacy of my inferences easily determined. Aware, indeed, of the many sources of mistake in medical reasoning, and sensible also, but disclaiming all wish to enter the lists of controversy, that, in the collision of sentiment, when conducted with candour and a due regard to the interests of science, error is corrected, and truth often elicited, I offer the following observations to the consideration of my professional brethren, in the hope, that if they should be even proved to be altogether erroneous, they may, by exciting a more fortunate or judicious inquiry, indirectly tend to the deciding of a point of practice in medicine, than which I know not one at present of more interest, or greater importance.

Dumfries, July 28th, 1825.

ON VACCINATION.

The degree of security afforded by Vaccination against variolous infection having again become a subject of discussion, I beg to call the attention of medical practitioners to a circumstance connected with it,[1] which appears to me to be of deep importance, and which seems to be overlooked, although there is reason to believe that the neglect of it is tending to lessen the specific effect of the Vaccine Virus on the human system, and will, unless remedied, render it, in time, totally useless as a safeguard against the Small Pox.

In order to unfold this opinion, as

---

[1] The substance of this paper was read at a meeting of the Medical Society of Dumfries, May 2d, 1825.

well as the evidence on which it is founded, I shall very briefly advert to the origin and progress of Vaccination, and also to some facts relative to the effect of morbid poisons on different animals.

About half a century ago, the public attention in some of the principal dairy counties in England was drawn to a vesiculo-pustular eruption which appeared at times on the udders and teats of the cows, and was occasionally communicated to the hands of those employed in milking them, from its being observed that the persons, to whom the disease had been thus conveyed, ever after enjoyed a perfect immunity from the Small Pox; so fully, indeed, did that portion of the inhabitants of these districts, under whose observation this circumstance occurred, rely on the security so obtained, that they derided the attempt to convey Variola to such as had had the Cow Pox, so the eruption was termed by them.

Little regard, however, seems to have been paid to this popular belief by the medical practitioners on the spot, until Dr Jenner, having ascertained the truth of it by repeated experiments, announced the fact to the world in the year 1798.

It is unnecessary to notice here the controversies to which Dr Jenner's publication gave rise. Suffice it to observe, that the trials which were made by the profession, to communicate Variola to those whom they had vaccinated, completely failed. The Cow Pox having thus triumphantly undergone the *experimentum crucis*, Vaccination was soon eagerly adopted by the unprejudiced and disinterested in every country to which the vaccine lymph was conveyed. It is true that, during its early practice, failures were announced; these, however, were so few, and, in some instances, of so suspicious and doubtful a character,[2] that they did not lessen its credit with the profession, though they very much retarded its progress with the public, notwithstanding the host of facts which were appealed to by its supporters in favour of the protection that it afforded: a protection which was afterwards supposed to be greatly augmented by various precautions which had been adopted with the view of ensuring the perfect action of the Cow Pock virus on the system, and which they certainly, for a time, appeared to accomplish, as several years elapsed without variola occurring in such a number of the vaccinated, as to cause the virtues of the Cow Pox to be seriously questioned. Within these few years, however, such occurrences have been frequent, and have been ascribed to ignorance or carelessness in employing spurious or decomposed virus, or to the progress of the vaccine vesicle being disturbed or imperfect, from violence or disease, or to the virus producing a local action only; and although the Small Pox which has hitherto appeared in the vaccinated has, in most instances, been of an extremely mild nature,[3] yet from the alarm which the failures have excited, increased attention has of late been paid to the causes whence they are supposed to proceed; nevertheless, they still continue to occur so frequently, in

---

[2] See evidence at large, as laid before the Committee of House of Commons, on Dr Jenner's petition, March, 1802.

---

[3] Variola, however, seems to be assuming a severe character, as well as being more frequent in the vaccinated; for it appears from Dr Gregory's reports, that 195 persons, labouring under genuine small pox, were received into the Small Pox and Vaccine Hospital in London, during the year 1824, out of which number 45 were cases of the *confluent*, coherent and distinct kinds subsequent to vaccination; and in the following year (1825), 412 persons with variola, were received into the same Hospital, *one hundred*

---

and forty-seven of whom were supposed to have been previously vaccinated; of these 122 had the disease in an abbreviated form; *in twenty-five it ran its full length, and in twelve of these it terminated fatally.* Dr G. adds, that in many of the unmodified and fatal cases just referred to, the evidence of prior vaccination was very imperfect; *but, in others, the proofs of vaccination were distinct and undeniable.* If we contrast these statements of Dr G.'s with those of Mr Cross and Dr Thomson in the year 1818 and 1819, the increased severity of variola in the vaccinated becomes very obvious. "Full length small pox in the vaccinated," says Mr Cross, "has been so rare during the epidemic in Norwich in 1819, that I have not met with a single instance of it, either in my own practice or in my enquiries amongst the poor; a few such cases, however (six in 10,000 vaccinated who were exposed to the contagion), occurred under the care of other surgeons, two of which had a fatal termination. The small pox Dr Thomson states, which was met with in the vaccinated in Edinburgh during the Varioloid Epidemic of 1818 and 1819, was almost invariably an abbreviated and mild kind—so exactly resembling Chicken Pox, that he believes them undistinguishable."

those even who have been vaccinated by careful and experienced practitioners, that many of the friends of the Cow Pox now consider it to possess only a modifying, or rather a *restraining*, power over variola, so as to render it a comparatively mild disease.

I rejoice, however, to think that there are not yet sufficient grounds for this diminution of confidence in the preservative powers of vaccination, *provided it be employed under certain regulations.*

It was decidedly proved by innumerable experiments on the introduction of vaccination, that it rendered the system unsusceptible of the action of Variola. Its opponents in this country were at that time numerous, and too much interested and attentive to allow a single case of Small Pox in the vaccinated to remain unnoticed and unblazoned; yet, with all their vigilance, such occurrences were so rare as scarcely to exceed those of secondary Small Pox.[4]

If it be observed that vaccination was not so generally employed at the period I allude to, as it afterwards was, and, consequently, that the number of failures to the number vaccinated ought to be borne in mind, it ought also to be recollected that a number of these failures undoubtedly proceeded from causes which experience has taught us to guard against. Besides, when it is considered that the Small Pox was then often a prevalent disease, and the vaccinated in consequence much exposed to its infection, whilst very few of them were affected by it, the most satisfactory proof is, I think, afforded of the security derived from vaccination, in the early period of the practice; yet we now find this security most alarmingly lessened. By some, this is attributed to the Cow Pox, conferring only a temporary immunity from Variola; if this supposition were correct, it is evident a somewhat determinate time would, in general, elapse before the system becomes susceptible of variolous infection after vaccination.—This, however, is not observed to be the case, modified Small Pox being met with in those who have been vaccinated a few weeks, as well as in those who have been vaccinated 15 or more years[5];

---

[4] See evidence at large.

---

[5] Dr John Thomson observed the varioloid eruptions to occur at various intervals from a few days to fifteen years after vaccination.—*Thomson on the Varioloid Epidemic.*

Mr Cross states that after the first few weeks from the completion of the vaccine disease, the modified variolous eruptions may appear at any subsequent time, and that they prove less mild in those above three or four years of age, and what is still more adverse to such a conjecture is, that by far the greater portion of those who have been attacked with it of late have been persons who had been vaccinated but a few years[6]; indeed, the number of adults in whom that disease has appeared, who have had the Cow Pox in infancy, and, of course, soon after it was first employed as a preventive of Small Pox, is so very small as to render it probable that, in most instances, it has been owing to the process of vaccination in

---

than in those who are younger.—*Cross on the Variolous Epidemic, p.* 198.

[6] Dr Gibson reports to Dr J. Thomson, that out of 251 cases of small pox after vaccination, which came under his observation, by far the greatest number of those attacked had been vaccinated less than two years.—*Thomson on the Varioloid Epidemic.*

In the town in which I write, several cases of Modified Small Pox occurred in the vaccinated during the winter and spring months of 1825, and were confined chiefly to persons under ten years of age.—*Author.*

them having been interrupted by causes with which we were not at first acquainted. Some, I am aware, will consider this reasoning inconclusive, from the known fact that the progress of life renders the system, in a certain degree, unsusceptible of variolous infection, and, to this circumstance alone they will possibly be inclined to ascribe the difference of protection which is observed to obtain between those who have been vaccinated lately, and are still children, and those who have been vaccinated many years ago, and are now in the prime of life, though they may be unable to explain why almost every one of the children, who were vaccinated during the early years of the practice, passed the supposed period of ordeal without having variola, whilst a considerable number of those who have been vaccinated of late years, have been attacked with it. Further, what renders such an assumption, if entertained, altogether untenable is, that a very small number of grown-up persons, who have been vaccinated in childhood, and happen to be now exposed to the small pox infection, are affected by it, whilst comparatively few of the *unprotected adults* so situated escape the disease. Admitting, however, that the Small Pox has attacked a few adults who had been perfectly vaccinated when very young, it does not invalidate our arguments, for variolous inoculation itself does not invariably confer perfect protection on every individual. The questions for our consideration are, does vaccination afford a less degree of protection against variola than formerly?—and if so, to what cause his this to be attributed? Mr Cross, who advocates vaccination with the warmth and sincerity of genuine benevolence, states, that out of 10,000 vaccinated persons in Norwich, rather more than two in every hundred were affected by the small pox contagion during the Epidemic there in 1819, but it almost invariably produced a short and trifling disease. In only six instances did it occasion the full length small pox, and in two only did it terminate fatally.—Now, it is stated, "that in a small proportion, varying under different circumstances, but at the highest not to be estimated at more than *one in twenty*, vaccinated persons do not resist the (variolous) contagion altogether."—*(Quarterly Review, March,* 1826.*)*—And be it observed, that the facts whence that conclusion is deduced must have occurred since 1819, as the same writer asserts, with what degree of justice will appear from the Report of the

London College of Physicians in 1807, but which is here of no further moment than pointing the epoch whence *his* facts and observations are to be dated, that although an eruptive disease similar to small pox has been of frequent occurrence in the vaccinated from the introduction of vaccination to the present time, *no light was thrown on the question of its frequency* until this period.—*(Ibid)*. I mean not by this to insinuate that his inference is inaccurate; on the contrary, I am of opinion that there is reason to fear that it is too well founded, as will presently appear. In June 1825, Small Pox appeared in a seaman of H. M. frigate Phaeton, and was communicated to 17 persons on board; of these, ten appeared to have been properly vaccinated, seven of whom were midshipmen from 16 to 23 years of age, who had had the Cow Pox when children; two were boys who had undergone vaccination on board *but a few weeks* before, and in one, the time when vaccinated is not stated. In three of this number, the disease assumed a severe form. Besides these ten persons, two who were undergoing the process of vaccination on board were attacked with Variola, one on the 6th, the other, on the 14th day after being vaccinated, the former of whom died, and the latter recovered with difficulty.—*(Dr Burnett's Report to the Admiralty Board, Oct.* 1825.) Now, supposing 200 of the Phaeton's crew to have been vaccinated at the time Small Pox appeared in that ship, which is probably a much greater number than there actually was, we have one in twenty of them suffering from consecutive variola, and of these, a great majority must, from their ages, have had the Cow Pox several years after it was introduced as a prophylactic. Nor is the failure of vaccination to afford protection confined to the experience of British practitioners, as the accounts from the Continent of late years testify; although the proportion of those attacked with consecutive small pox there, is not in general mentioned. Dr Gitterman, however, states, that in a Variolous Epidemic which prevailed at Emden in 1819 and 1820, of 200 *children* in an hospital there, most of them vaccinated, *eight* of the vaccinated either caught the disease, or took it by inoculation, but it was that short and mild disease which is called modified small pox.—*(Quar. Review, March,* 1826.)

Here again we find that one in twenty-five, admitting the whole of the children to have had the Cow Pox, suffered from Variola; and here also we observe, that it appeared in persons who necessarily underwent vaccination, many years after it was introduced as a preventive of that disease.

Referring, on the other hand, to the reports from different highly respectable sources soon after the introduction of vaccination, we learn, that of nearly 12,000 persons who had been vaccinated at the Small Pox Hospital in London up to the year 1803, 2,500 of them had been afterwards inoculated with small pox matter, *while they were, at the same time, exposed in an Hospital full of its infection*, without the disease being communicated to one of them. (*Report of the Small Pox Hospital in London, Dec.* 1802.)—However satisfactory this statement is of the security conferred by vaccination during the period it embraces, I consider the proofs contained in the

Reports to the Royal College of Physicians of London, in 1807, more conclusive on the subject, inasmuch as they are derived from five additional years experience of its powers; which experience appears to have confirmed the high expectations that had been formed of them, notwithstanding it was furnished by those who were *inimical*, as well as those who were friendly to its adoption. I therefore quote with much pleasure from these Reports, as given by Mr Moore, in his History and Practice of Vaccination, marking in italics such passages as particularly bear on the point under consideration. The Royal College of Surgeons of London state, "that from accounts which they had received of 164,381 persons who had been vaccinated, it appeared that, in *fifty-six* of these, small pox had afterwards occurred, and in sixty-six, eruptions of the skin had followed."—The Royal College of Physicians of Edinburgh declared, that "the evidence in favour of it (vaccination) appeared to them so strong and decisive, that in May last they, spontaneously and unanimously, had elected Dr Jenner an honorary Fellow of their College; and this was done with a view to publish their opinion with regard to vaccination, and in testimony of their conviction of the immense benefits which have been, and which would in future be, derived to the world from it." The declaration of the Royal College of Surgeons of Edinburgh stated, "*that as far as their experience went, they had no doubt of the permanent security against the small pox, which is produced by the constitutional affection of the vaccine, and also that they had met with no occurrence which* *operated in their minds to its disadvantage.*" The King and Queen's College of Physicians at Dublin reported, "that the general introduction of vaccination into Dublin, and throughout Ireland, was in the year 1804; that the practice had been found safe *and fully to answer all the purposes that had been intended.* Some cases had been reported to them of persons suffering from small pox, who had been vaccinated; but upon minute investigation, it had been found that these supposed failures originated generally in error, in misrepresentation, or in the difficulty of discriminating between small pox and other eruptions; and that *no case had come to their knowledge, duly authenticated by respectable and competent judges, of genuine small pox succeeding the vaccine disease.*" The Royal College of Surgeons of Ireland confirmed the above, and stated, "that the few cases of small pox which had occurred in that country, after supposed vaccination, had been satisfactorily proved to have arisen from accidental circumstances, *and could not be attributed to the want of efficacy in the genuine vaccine infection, as a preventive of small pox.*" From these documents and all others which could be collected, the London College of Physicians framed one comprehensive Report which was laid before the House of Commons in April, 1807.—They state in it that "*the security derived from vaccination against the Small Pox, if not absolutely perfect, is as nearly so, as can perhaps be expected from any human invention,* for amongst several hundred thousand cases, with the results of which the College have been made acquainted, the number of alleged failures has been surprisingly small; so much so, as to form, certainly, no reasonable objection to the general adoption of vaccination. Indeed it appears that there are not nearly so many failures in a given number of vaccinated persons, as there are deaths in an equal number of persons inoculated for the small pox (about one in three hundred of these is said by them to perish); *and it is a most important fact that in almost every case where small pox has succeeded vaccination, it has neither been the same in violence nor in duration; but has, with very few exceptions, been remarkably mild, as if the small pox had been deprived by the vaccine of all its usual malignity.*" This Report is drawn up with much and probably praise worth y caution, as it evidently contains no opinions in favour of vaccination, which are not fully warranted by the documents from which it is digested. Comparing it, however, and those on which it is founded, with the statements immediately preceding them of the recent occurrence of variola in the vaccinated, the difference of protection obtained from vaccination for a series of years after its introduction, from that which it now confers, is too obvious to require a single comment.

But none of the causes which have yet been assigned, appear to me to account for its thus failing to afford the same degree of security at present, as it did when it was first employed; so far indeed from their accounting for the failures which have occurred, we find that these have multiplied of late years,[7] notwithstanding the judicious measures which have been adopted to obviate their supposed causes, which is a sufficient proof that we are still ignorant of a *something* in vaccination; which is essential to its conferring its former, and what may be deemed almost perfect protection. Neither do we receive any light on this subject, by

---

[7] By a table kept by Dr Gregory at the Small Pox and

Vaccine Hospital in London, it appears that in the year 1810, the proportion of cases of small pox succeeding vaccination to the whole number of admissions, was as one in thirty; in 1815, as one in seventeen; in 1819, as one in six; in 1821, as one in four; and during the year 1822, as one in three and a half. Here we perceive the gradually increasing proportion of cases of small pox in the vaccinated admitted since the year 1810, and we observe by a table drawn up last year by the same physician, that during the period which this report comprehends, neither the number of admissions nor the mortality in that Hospital was on the whole diminished; the circumstance, therefore, of the successively increased proportion of cases of consecutive small pox admitted, cannot with any appearance of truth be referred to a gradual and progressive decrease of unvaccinated persons, but must be acknowledged as a fact, whose cause is veiled in obscurity.

adverting to what has occurred in the contagious Exanthemata, for we perceive that Variola, Rubeola, and Scarlatina, the most ancient of these of which we have any written knowledge, exhibit occasionally at present precisely the same characters and *always yield the same protection*, which they did a thousand years ago; and it is to be observed, that the first of these diseases has, for more than a century past, been partly propagated in this country by inoculation, and for ages in other parts of the world, without the security so derived from it, when peculiar idiosyncracies are considered, having been once justly doubted.

From a consideration then of the whole of the before-mentioned circumstances, and reflecting, also, that the vaccine virus did not originate in man, I am led to believe, that it has undergone some change in passing through the human system. We know that some of the morbid poisons, which affect the lower animals, exert no specific influence on the human body: others again, which spread destruction amongst mankind are observed to be innoxious to the brute creation,[8] and though a morbid poison may appear in one species of the latter, which seems capable of being transmitted to man, yet, with the foregoing facts before me of the different susceptibilities to morbid impressions between his system and that of the other animals, I conceive it to be in the highest degree improbable, however the morbid poison may be affected at first, that it should pass an indefinite number of times through a system, whose *general* impressibility and actions differ from that in which it was generated, without at length undergoing such a change of quality as will deprive it of its original powers; and it is a matter of surprise to me, that this should never have occurred to those who have observed that the Cow Pox appears to be modified and rendered milder by passing through a succession of subjects; at least, I am ignorant of its ever having been affirmed by any that the vaccine virus is likely to undergo a change of quality by passing through the human system, from its being an *exotic* in it. Dr M. Good, in the second edition of the Study of Medicine, recently published,[9] thinks it probable that the vaccine lymph has deteriorated by transmigrating through a succession of individuals; at the same time he relates experiments which I shall notice by and by, but which he could not have considered of any value, had he viewed the Cow Pock virus as an exotic in the system of man, and likely from this circumstance to undergo a change of quality; and the writer in the *Literary Gazette*, whose sentiments regarding the deterioration of the vaccine lymph I afterwards advert to, distinctly states his grounds of argument to be different from that which I advance. It is, however, probable that an idea so obvious has occurred to others, with whose opinions I am unacquainted; but the question need not detain us, although I may be permitted to observe, before dismissing it, that what was yesterday a matter of conjecture, may to-day be a probable opinion, and to-morrow an absolute certainty, according as it comes to be illuminated and confirmed by the gradual accumulation of evidence.

---

[8] It appears by Blumenbach that variola, rubeola, scarlatina, pestis, syphilis, &c., are diseases peculiar to man, and incommunicable to brutes. Disease may also originate in one genus of the latter, and be communicated to animals of other genera, but these cannot always *propagate* it; for example, hydrophobia may be communicated by the dog to man, the horse, cow, pig, &c., but they cannot extend it.—It is the canine genus alone; for instance, the dog, fox, wolf, &c., which can do this. Here we have a striking illustration of the different impressibility of different animals to morbid poisons, and likewise of the different secretory actions of different animals, whereby one genus or species of these, is susceptible of impressions from which the others are exempt, and where others of them again are obnoxious to the action of a morbid poison, without having the power of generating it anew, although in the genus in which it originates it may be propagated *ad infinitum* without losing any of its primitive qualities.

---

[9] Published, I believe, in August or September, 1825.

If it be objected to the opinions which I have advanced, that the appearance and progress of the vaccine vesicle have undergone no marked change, and therefore afford them no support, it is well known how difficult it is to distinguish some kinds of eruptions from those of others; and much more difficult must it be, I imagine, to detect a slight change in any particular one. Laying this argument, however, aside, we have incontrovertible proof that the Cow Pox has undergone *some* change, on whatever cause it depends, from its virus not producing the same ultimate effects on the system, as evinced by its not now conferring on it the same security as formerly; which change, as there is not the slightest reason to suppose that the human constitution has undergone any alteration of late years in this country, seems to me, from a review of the whole of the facts which have been adduced, to be owing to the vaccine virus having lost, in a certain degree, its original qualities, from having passed for a number of years through the system of man without having been renewed from its primitive source. It will probably be asked, if this conclusion be correct, how happens it that so general a cause should operate so very partially? It will, however, be observed, that the prophylactic power of the vaccine virus is not here supposed to be altogether lost, but *as yet* only weakened by passing through the human system, and it still therefore produces in the constitutions of individuals highly susceptible of its action, that permanent structural change which is necessary for their perfect security. The same objection might be made, though I own with much less justice at present,[10] to the Cow Pock being a preventive at all of variola, from its not being uniformly so, whilst in truth its effects, like those of every other agent which acts on the living system, are in proportion to the susceptibility of this, and the power of the agent applied. If the former be great, the system is easily and powerfully affected by the application of the exciting cause, but if the latter be weak, it fails to make any impression on it, unless its susceptibility to the operation of this cause be strong, illustrations of which reasoning will readily occur to the mind of every medical reader, and afford by analogy, if not by direct proof, additional confirmation of the probable accuracy of the supposition of the vaccine virus being weakened, from its now conferring a more partial, as well as less perfect security against variola than formerly. But it is said that "it is not the case that the cow pock fails to afford the same protection against variola which it once did; for vaccination, it is asserted, never afforded perfect and absolute immunity from variolous contagion, but in point of fact did nothing more than render the system unsusceptible of receiving that disease by inoculation; and that it furnishes, at the present moment, as great and as complete security against the disease as it ever did;"[11] for, "in the general exultation on the discovery of vaccination, its powers were over-rated."[12]—Further, it is maintained, "that unless it could be shewn that the occurrence of the Small Pox in the persons of the vaccinated was confined exclusively to those who had been subjected to this process during the latter years of the practice, the hypothesis of deterioration in the lymph, and change in its qualities, is entirely inadmissible, and must be rejected."[13]

---

[10] *Exceptio probat regulam*; when, however, what are called exceptions preponderate, they *then* cease to be such, and go to form the rule.

---

[11] Edin. Med. and Surg. Journal, October, 1826.

[12] Ibidem, Edin. Journal of Medical Science, April, 1826, and London Quarterly Review, March, 1826.

To be able to decide these questions, we must dismiss preconceived opinions, and impartially examine facts. That vaccination never possessed any thing more than a relative influence over the Small Pox, simply rendering the human system incapable of receiving that disease by inoculation, but never extinguishing its susceptibility of variolous contagion, is said to be shewn by the experiments of Dr Woodville, at the Small Pox Hospital in London, in 1799, and by the phenomena of the variolous epidemics of 1816, 1817, and 1818, in this, and other countries of Europe, where it is stated to have been observed, that persons who had undergone vaccination when the practice was first introduced were not less liable to the Small Pox, and suffered the disease in no less severity than those who had been vaccinated but a few months, and at all intermediate periods. Unfortunately for the validity of this opinion, Dr. Woodville's evidence here might be met with that furnished by the medical attendants of other public establishments, and even by his own experience in private practice, had he himself not rendered this altogether unnecessary, by subsequently admitting that the eruptions which appeared on the persons whom he vaccinated at that time in the hospital, were owing to their breathing a highly variolated atmosphere whilst they were undergoing the process of vaccination, and before the prophylactic power of the

---

[13] Edin. Med. and Surg. Journal, October, 1826.

Cow Pock could secure them against its operation;[14] indeed, Dr. Jenner makes it appear highly probable, that he even committed the further error at the time alluded to, of propagating the variolous for the vaccine disease;[15] and, with regard to the proof alleged to be afforded during the years 1816, 1817, and 1818, of the liability of persons vaccinated in the early period of the practice to Small Pox, we observe, that the number of those affected with it, to that of the then recently vaccinated whom it seized, is not mentioned. Now, it is known, that there are states of the human system, and also of the vaccine lymph, which render the employment of this altogether effete; and as vaccination, ever since its introduction, has in innumerable instances been performed by ex-professional persons, and of course incompetent judges of the causes which interfere with the process, and even in the hands of the Profession it was never asserted to be an infallible protection to every individual, we may therefore expect to find, when the vaccinated have been accumulating for years *untested* from the long absence of a variolous epidemic, that cases of consecutive small pox will occur in them indiscriminately, and from the circumstance of there being a much greater number of persons who had been vaccinated for several years to that of those who had recently undergone the process, the former will appear to be as susceptible as the latter of variolous contagion, whilst in fact they enjoy a different and much more perfect degree of protection. To be convinced of the truth of this assertion, we have only to attend to the frequency of small pox in persons who have been vaccinated of late years, and ascertain the proportion of those affected with it to what it was formerly; for I do not conceive that they who contend that vaccination merely renders the system incapable of receiving the small pox by inoculation, but never afforded a perfect and absolute immunity from variolous contagion, will insist on my showing that the recent occurrence of small pox in the vaccinated is confined exclusively to persons who had undergone the process of late years, as it is obvious, if their supposition be correct, *all* the vaccinated, from the introduction of vaccination to the present time, are equally liable to receive that disease by infection, *from their all being in an equal degree un-*

---

[14] Moore's History of Vaccination, p. 34.

[15] Continuation of Facts and Observations relative to the Vaccinæ Variolæ, by E. Jenner, M. D.

protected against this—and happily now in this country, with some very rare exceptions—only mode of commnuication. It is enough, and establishes, I imagine, the fact of the deterioration of the vaccine lymph, when it is shown that persons who have been carefully vaccinated of late years enjoy a much less degree of protection than those who underwent the process soon after its introduction; ample evidence of which is to be found in the reports which I notice; and I beg to refer the reader to those of Drs. Burnett and Gitterman, with that from the Small Pox Hospital in 1802, as particularly bearing on the point at issue.—Yet in despite of the facts contained in the reports of the early practice of vaccine inoculation, it is now asserted—"that from the introduction of vaccination to the present time, numerous instances have been recorded of an eruptive disease similar to small pox in persons previously vaccinated.—*Quar. Review, March* 1826. But the only proof that I can perceive, which is offered of the accuracy of this assertion, is the *similarity* of the eruption to that of small pox, although it is obvious if the eruption alluded to had, in general, or even in many instances, been modified small pox, its precise nature must soon have been detected by its producing the unmitigated form of that disease in the unprotected, and by its commonly appearing in the vaccinated who happened to be under the same roof with those labouring under variola. Moreover, the assertion is at variance with evidence resting on the most respectable testimony;[16] in it, however, we have unequivocal proof, when contrasted with the experience of late years, of the very important fact that *full length* Small Pox was for a long period after the employment of the Cow Pock as a prophylactic, seldom or never met with in the vaccinated. Again, whether the inference of the deterioration of the vaccine lymph be admitted or not, it is certain and must be conceded, that

---

[16] Besides the proof which I have adduced of this, Mr Moore, in his History of Vaccination, p. 84, states, that—

"in the Foundling Hospital in London, vaccination was introduced in 1801, and though the children are sometimes intentionally exposed to the infection of the small pox, yet in 16 years only one slight case has occurred in which a variolous eruption was suspected. In the York Military Asylum, there has been the same success." Statements similar to the foregoing might be added of the early prophylactic power of vaccination, but I content myself with what I have submitted, merely observing farther, that Drs Mosely and Rowley and Mr Birch, the decided enemies of vaccination, were unable, when examined by the Committee of the House of Commons, in 1802, to adduce from the practice of others—for in their own experience they had met with none—more than two properly authenticated cases of vaccination failing to afford perfect protection. Evidence at large, p. 39 *et* seq.

small pox, subsequent to vaccination, is *now* a frequent occurrence; but to maintain from this circumstance alone, and there appears no other to countenance the opinion, that vaccination never possessed any thing more than a relative influence over the Small Pox, and that the Royal Colleges in their Reports of 1807 exaggerated its prophylactic power, is, in my apprehension, when I consider the competency of the Reporters and the evidence on which they proceeded, to set conjecture in opposition to proof, subvertible only by demonstrating that the virus of the Cow Pock is *incapable* of change by passing through the human system, a thing, I need not observe, still to be proved. And equally destitute of a good foundation, and incapable, therefore, of solving our difficulties, is, I conceive, the supposition which attributes the extraordinary frequency of consecutive Small Pox of late years in the vaccinated, *solely* to the fact of there being a greater number of vaccinated persons to take that disease to what there was formerly.—(*Quar. Review, March* 1826). If this opinion were correct, the frequency of variola subsequent to vaccination ought to have been nearly the same in an equal number of the vaccinated under similar circumstances, from the time vaccination was first introduced to the present period. The records of experience, however, are, as I have already shown, opposed to this hypothesis, and let it be noted, it is not so many of an unnumbered mass of the vaccinated, but the proportion of those who have had consecutive variola at different periods of the progress of vaccination that is therein distinctly stated, and as it is evident that an accumulation simply of the vaccinated would not alter the *proportion* of the failures, but would merely produce an increase of their number in a ratio to the aggregate number of the persons who had undergone the process; it is futile and illogical then to argue that such a circumstance explains why the proportion of individuals having Small Pox subsequent to vaccination has increased from one in three hundred[17] to one in twenty.[18] If to invalidate this position, it be said, that variola succeeding vaccination was in the early period of the practice so mild a complaint, that it was mistaken for varicella, or some other trifling eruptive disease, and that medical aid was not sought for it, and consequently that the number of persons affected with it was unknown, such assumptions are positively nullified by the statements of the medical attendants of hospitals and other public charities, whose want of skill and attention it would be absurd, as well as unjust, on hypothetical grounds to impugn. Besides, if such arguments be employed, it may be demanded, how came variola to be then so mild in the vaccinated as to be mistaken or disregarded, and of late years, under circumstances of increased experience and precaution, to be so very often a severe disease. Atmospheric causes do not explain this; for they who formerly escaped altogether, or who had the disease in a mild form, were many of them subjected to an air charged with an active and *virulent* variolous contagion. In short, when we find that there is no reason to suppose that vaccination confers against variola a temporary immunity only, and likewise find, that not only a much larger proportion than formerly of the vaccinated is now affected with that disease upon exposure to its contagion, but often also under a form of severity which was extremely rare, if not wholly unknown in the first years of vaccination, it is impossible to avoid the conclusion that the protection afforded by the process during the early period of the practice is now greatly diminished; and when we further direct our attention to the fact of the different impressibility and secretory actions of different animals, and also to that of vaccination having for a certain time from the introduction of the practice conferred an almost infallible security from variola, it appears highly probable, that the diminution of protection which now obtains, proceeds from the vaccine virus being an exotic poison in the human system, and consequently losing by successive transmissions through it, its primitive powers. I know, that the late Dr Good was of opinion, that "it has been proved that the vaccine virus loses nothing of its specific power after a long series of transmissions from individual to individual; for cows, he says, have been inoculated with it in this state of repeated descent, and have exhibited the disease in all its natural violence."—*(Study of Medicine, vol. 2d, p. 596—1. Ed.)*—These experiments, however, only show, that at the time when they were made, the vaccine virus from the human subject was capable of exciting a disease in the cow, *apparently* of the same nature as that from which it had been originally derived; but the proof is defective and obviously insufficient, I apprehend, to warrant Dr Good's deduction, for as I have already stated, I do not conceive that the cow pock virus has even yet lost much of its specific properties; it is possible, therefore, for it, on being subjected to the actions of the system in which it was first engendered, to recover its pristine qualities, although *we have no evidence* that it did so in the experiments alluded to, for no mention is made of the virus from the vesicles so produced, having been transmitted to the human body; we, are, therefore, ignorant of the effect which it would have produced, or the security which it would have conferred on it; the *identity*, then, of these vesicles, with the genuine cow pock vesicle, still remains to be proved,[19] and this Dr Good seemed to be aware of when he revised the Study of Medicine for a 2d Edition, as he therein expresses his belief that the vaccine lymph has undergone a change of quality from the numerous transmigrations from individual to individual, which it has now sustained, yet, with a strange inconsistency, he retains in this Edition the passage I have just adverted to, which, if the conclusions contained in it be at present correct, nullify the opinion of the deterioration of the cow pock virus. But we are ever to remember, that in every practical science, and more especially in that of Medicine wherein the premises are necessarily uncertain,[20] that no conclusion is entitled to our unqualified assent, until it is submitted to a widely extended

---

[17] Report of the Royal College of Physicians of London, 1807.

[18] London Quarterly Review, March, 1826.

---

[19] The same objection applies to all experiments which have not been carried the length of *clearly* ascertaining the effect of the virus on the *human* system.

---

[20] Medical writers have been taunted with admitting the existence of effects without causes, causes without effects, different effects from the same cause, and the same effect from different causes; and it is not perhaps necessary that they should be anxious to clear themselves of these charges,

---

with the exception of the first of them. To those who seek an explanation of the phenomena presented by an animate body, in the laws which seem to govern inanimate matter, such admissions doubtless appear absurd; but to those who view it as a *living* system, susceptible of a variety of impressions and actions, and constantly influenced by innumerable, and many of them unknown agents, which cause its local and general actions, and *the degree* of its several susceptibilities to be ever varying, it appears much more absurd to maintain, that an effect may not be produced by causes which elude our senses (for no one, I believe, ever imagined the existence of effects in disease, independent of causes), or that a state of the body may not at times exist, which renders the living fibre unsusceptible of certain impressions, or that the same cause will always produce the same effect, or that similar effects, under different states of the system, may not proceed from different causes. These opinions are illustrated and confirmed by what occur in common continued fever. Here the fever very often proceeds from causes which escape our notice, and of whose essence we are in *every instance* entirely ignorant, and of those who are exposed to its causes, all are not affected by them; also, the *onus* of the disease is frequently observed to fall on different organs, in different individuals, producing a considerable variety in the symptoms, or visible effects; nor have we any reason to believe that the fever experience, and every fact, and every observation which bears upon it, is fully and impartially weighed; and if it be found irreconcilable or inconsistent with these, however specious it may appear from reasoning upon one or two objects, or occurrences, it wants the bases on which only it can rest, and may be safely dismissed as erroneous.—These remarks chiefly proceed from my being sensible that some confirmatory proof, which the subject I have presumed to discuss admits of, is awanting; but as it is not likely I shall ever have it in my power to supply this, indeed, in private practice it would not, perhaps, be prudent to attempt it, even

---

is originally produced by the operation of one, but of several, and variously combined causes concurring to induce a concatenation of disordered actions, which are varied according to the different general, or local susceptibilities, or states of the system of the different individuals affected with it.

did an opportunity offer, I shall merely point out the deficiency, and at the same time express a hope, as it is a question of great importance, that some of the medical gentlemen attached to the Vaccine Institutions, will be led to ascertain whether the vaccine virus has undergone any change *from passing through the human system*,[21] by inoculating an equal number of children with this virus, such as it now is, in the human subject, and with virus direct from the cow, and after the lapse of a few months, testing the whole of these with variolous matter, and if opportu-

---

[21] A writer in the Literary Gazette, of May 28th, 1825, has hinted the probability that the vaccine virus becomes weakened in a direct ratio as the distance it may have attained from its original source in the cow, and therefore that it will cease in time to be a preventive of small pox. It will have been observed, that this is precisely the opinion I entertain on the subject, and which I have endeavoured to show is the probable cause of vaccination affording, at present, a less degree of security than formerly. There is, however, a difference in the premises whence each of us has drawn this conclusion. He argues upon the assumption that a diminution of the activity of the virus of some contagious diseases is evident from the milder forms which these diseases now assume, compared with those which they formerly presented; consequently that there is strong reason to suppose that other contagious diseases, or diseases propagated by a specific infection in which cow pox is included, will likewise have their virus weakened and become milder from the same

---

cause. He has not, however, mentioned the diseases which he supposes have become milder; if he allude to Small Pox, Measles, or Scarlet Fever, we know that not one of these is commonly milder *in its attack* than it was centuries ago, and if they are now generally less severe in their progress and more rarely fatal in their termination, it is, I conceive, owing to their more judicious treatment, and not to the virus which produces them being weakened; in fact, the benign form of these and *other contagious diseases* in some persons, is often observed to occasion the most malignant form in others, and *vice versa*, proving that the mildness or severity of the symptoms is independent of the blandness or malignancy of the different poisons which occasion them, and most probably owing to constitutional or atmospherical causes; at least, affording no grounds to justify the inference, that the virus of a contagious disease is weakened, because that disease appears in a milder form, so long as that form possesses its true specific character, as denoted by the attendant symptoms and the permanent effects which some of these diseases produce on the system.

nities offer, exposing them also to its contagion, and carefully observing the effect of these upon them, whether any of them are susceptible of their action; and if so, whether it is those who have been vaccinated from the human subject, or those from the cow, or if both, what proportion they bear to each other; as also the severity of the symptoms which appear in each. These experiments ought to be repeated, on different subjects, for such a number of times as may be sufficient to prevent the possibility of error in our inferences; and if it be found that the vaccine virus has undergone the change which I suppose it has, it will then become necessary to determine at what periods we ought to return to its original source for lymph; though I am of opinion, as no *novel* practice is recommended, but merely that which appears to have been found efficient,[23] that we are already in possession of sufficient evidence to induce us to have recourse at once to the cow for this, and to continue to apply to the same quarter for it at short intervals, in order to preserve unimpaired to the human race one of the most valuable blessings which science has ever conferred on it.

---

[23] Dr Gregory, in the number of the London Medical and Physical Journal for November last, advises, that, in vaccinating, six or eight punctures should *at least* be made, allowing *all these* to be effectual in order to make the proper impression on the system. But this advice does not appear to be supported either by experience or analogy, for persons who have been vaccinated in the early period of the practice, and who exhibit on their persons but one perfect cicatrix of vaccinia, have hitherto enjoyed complete security from variola. Again, it appears by the experiments of Camper, that in inoculating with variolous matter, *one* efficient puncture produces as copious an eruption and affords as much protection as any number up to seven, which was the greatest number he thought it necessary to try.—Nor is this effect confined to variolous inoculation, for Sir A. Cooper states in his lectures, that with the morbid poisons no particular influence is manifested, whether the quantity inserted be great or small, whether the point of the knife be loaded with the poison, or whether it be slightly touched with it ; and in this, these poisons differ from the vegetable and mineral, their effects being wholly independent of the dose, or quantity employed. The suggestion, however, of Dr G., whether an improvement or not in vaccinating, clearly evinces one thing, and that of deep interest, which is, that at the Vaccine Establishment in London, there existed at the date of his paper, a doubt of the powers of vac-

---

cination as the operation is now performed; the knowedge of which fact alone, ought to induce those who have the means of determining the question of the deterioration of the vaccine lymph, to give it their serious and undivided attention, and to institute, without delay, such experiments as shall be perfectly conclusive on the subject, for by these only, carefully and judiciously conducted, is the question at present to be finally and satisfactorily decided.

FINIS.

DUMFRIES:
PRINTED BY W. CARSON.

Dr. Fairless with the
Author's com

BOTANICAL NOTES

OF A

VISIT TO SCHLESWIG-HOLSTEIN,

IN AUGUST, 1850.

BY

W. LAUDER LINDSAY, Esq., F.B.S., F.R.P.S., &c.
M.D. & F.R.C.S.E.

Read before the Botanical Society of Edinburgh, 9th Jan., 1851.

[FROM THE NORTH BRITISH AGRICULTURIST.]

EDINBURGH:
PRINTED AT THE NORTH BRITISH AGRICULTURIST OFFICE
1851.

besides the want of the "kirk," which the latter possess, as for instance, the residence of functionaries of such importance as butchers and bakers! Here I spent the three first weeks of August, devoting the last to a pedestrian tour through the wilds of the Hartz, visiting its beauties, both scenic and geological; but of the latter I have nothing to say at present. At first, the weather was excessively hot, the thermometer averaging 80° in the shade, but this was succeeded by a considerable amount of rainy weather. Before entering on the enumeration of the native or cultivated plants of the Duchy, I have a few introductory remarks to make on its geological and general features. The Schleswig-Holstein war, which was then raging fiercely (for I had arrived only a few days after the sanguinary battle of Idstedt), compelled me greatly to circumscribe my excursions, and I was thus deprived of the opportunity of visiting Kiel on the Baltic, which was then besieged, with a Russian fleet hovering in its neighbourhood, and Rendsburg on the Eider, then the scene of daily skirmishes between the Danes and Schleswig-Holstein troops. Curiosity prompted me strongly to go and see the scene of an actual siege or battle, but the difficulty with which this was attended in the way of procuring orders from, or passports to commandants of the fortresses, &c., and in my not speaking Danish, besides the danger of being seized as a spy, (which I believe actually befel some unlucky English artists, who, with more curiosity than prudence, had ventured too close upon the scene of a skirmish), determined me, on the principle of the Proverb, "A bird in the hand's worth two in the bush," to remain where I was. My rambles were therefore confined to a circle of about 10 miles, but this embraced a considerable variety of soil; the banks of the Elbe alone being exceedingly prolific in botanical treasures To render more intelligible the few words I have to say on the botanical geology of Holstein, I show you a map of that Duchy coloured geologically, very roughly, after one by Professor Forchhammer, of Copenhagen, contained in a statistical account,* (published and circulated privately among the members of an agricultural society at Kiel), which I met with by the merest accident in the house of a farmer at Schenefeld. It is exceedingly imperfect in its minute geological indications, chiefly on account of the very few observations that have been made, and in reference to this point the author says, in an exceedingly interesting and valuable pamphlet in the volume just mentioned on the Geology of Schleswig-Holstein;' "if I endeavour to produce here a geological map of this district, I must crave the most indulgent criticism on my undertaking, partly because I have been obliged to open up for myself quite a new path, partly because the difficulties accompanying such a work in this country are unusually severe, since we have merely spongy moveable materials to deal with and we have no mines or other means of examining sections of the strata." All the localities, that have been examined geologically are dotted upon the map, and these occur mainly along the line of the Altona-Kiel-Railway. The boundaries of the chief formations are therefore in a great measure hypothetical, but they are sufficiently accurate for my present purpose. I may mention *en passant* that I could not discover, by visiting the principal Booksellers of Hamburg and Altona, any public work on the Natural History of Holstein, with the exception of one or two Floras of Hamburg. This is the more to be regretted since Schleswig-Holstein, if not a very good locality for *collecting* geological specimens, is a rich field for geological speculation, as the great diluvial and alluvial formations are there largely developed; the boulders, which are scattered in greater or less numbers over its whole surface, constituting the most curious problem in its geologic character. Holstein is almost entirely Tertiary, and forms a very small part of the great plain of the north of Europe, which, commencing in the eastern part of the south of England, stretches along the north of France, Belgium, Holland, Germany, Denmark, Prussia, Poland, and Russia as far as the Black and Caspian Seas. A glance at the map will show that the great geological formations divide the Duchy into four great belts or zones, viz: the most easterly the Boulder Clay; the next, the Boulder Sand; then the Sand-heaths and Sand-marshes; and the most westerly the Marshes, composed of the alluvium of the Elbe, the richest soil in Denmark. It would obviously be out of place here to enter at length into a geological description of these formations, or of the lesser formations of the Brown coal, Chalk, Gypsum and Dolomite &c. also occurring in this Duchy and I merely introduce them casually in connection with the relation of plants to the soil on which they grow. Speaking generally, the Boulder Clay belt is characterised by the growth of the Beech, which there attains a great height and beauty, forming magnificent forests, which, fringing the numerous little fjords or bays, give a caste of peculiar beauty to the east or Baltic coast of Holstein. Here the ordinary meadow and pasture, field, forest, and hedge plants grow in profusion. This belt is exceedingly fertile; the plants chiefly cultivated on it being the various cereals, especially wheat and barley, with rape, and pease. The Boulder Sand belt is characterised by the luxuriant growth of the Oak, and the Fir (Pinus sylvestris and Abies excelsa), which, however, appears to be now almost extinct as a native. Here also the usual forest, field, meadow and hedge plants grow plentifully; but this belt is by no means so fertile as the last. The Sand-heath belt is characterised by the common ling (Calluna vulgaris) and Heather (Erica cinerea and tetralix) and by the predominance of moor, amphibious and certain aquatic plants. The sea coast and the sand dunes have also their peculiar marine and littoral vegetation; Psamma arenaria, Elymus arenarius and Carex arenaria being characteristic of the latter. In progress of time however and under favourable circumstances, these dunes become converted into pastures and meadows and gradually covered with grasses heath and bushes, of which the Rosa spinosissima and Hippophae rhamnoides are perhaps characteristic. The Duchy might also be very distinctly divided into three belts, according to its different degrees of fertility merely, viz.:—I. An eastern or fertile belt, consisting of high and dry land on the coasts of the east sea, corresponding pretty exactly to the boulder clay belt already mentioned. II. A middle or unfertile belt, consisting chiefly of heath and sand corresponding nearly to the Boulder sand and Sand-heath belts conjoined, and III. a western or most fertile belt, consisting of the rich alluvial marshes already noticed. A great proportion of the country is covered with wood, so much so indeed that this constitutes a characteristic feature of the whole of Denmark, which word literally signifies according to some Etymologists, (*Tanne mark*) "the country of fir" (but according to others it is the "country of the Danes)." On the whole, this Duchy is very flat, and a ridge of hills, running up its centre, divides it from north to south into two large inclined planes running down on the one side to the Elbe and North Sea and on the other to the Baltic. The highest points in the whole of Denmark are, if I mistake not, the Himmelsberg (543 feet) and Bings Borg (512 feet) not much higher than the Calton Hill. In reference to the picturesque features of the country a writer in a recent London periodical remarks. "On the eastern side lies a lovely region of gentle hills, crowned with beech woods and intersected with blue sparkling Fjords, on the west an extensive tract of some of the richest marsh land in the world. The broad green strip which extends along the whole eastern shore of the north sea, forming the coasts of Holland, Hanover, Oldenburg, Holstein & Schleswig, is wholly the product of the fine matter brought down by the Elbe, Weser, Rhine, Scheldt &c., thrown up into the banks by the action of the sea, afterwards protected by dykes and rendered productive by human labour. Between Hamburg and Gluckstadt, on the right bank of the Elbe, is the first of these marshes, then proceeding along the sea shore northward the marshes of Crempe and Wilster, then the renowned Ditmarshes and finally, crossing the Eider, the marshes of Schleswig, which extend to Jutland, where the rich alluvial deposit ceases and is exchanged for barren shifting sand banks & dunes. The marshes having never been disturbed by any action from beneath, present to the eye a perfect level, strikingly contrasting with the central ridge of volcanic origin running through the Danish peninsula, which forms the skeleton, on which they have been deposited. This hilly barren land, 'geest' land, as it is called by the natives, runs out into the flat marsh in tongues and promontories of all shapes and sizes, but is always perfectly distinguishable from it. Some even of the islands lying along the coast, which had been raised from the bed of the ocean before the formation of the alluvial soil, are half 'geest,' half marsh, and the country people have no idea that all the lands on the globe do not exhibit a similar distinction of soil, and will ask a foreigner whether his country is 'geest' or marsh. These two kinds of land present many contrasts besides those of a flat and hilly surface. The marsh is treeless; the 'geest' partially wooded; the former nowhere shows sand or heath, but the richest vegetable soil, field after field, meadow after meadow, and teems with abundance; the 'geest,' on the contrary, is to a great extent uncultivated. The marsh has no springs of fresh water, but is intersected by straight canals; on the 'geest' we find springs, and brooks, and rivers, and these contrasts in the physical aspect of the two portions of the country are fully equalled by those of the moral character, and mode of life of the inhabitants. Crossing the heathy district, which is very thinly peopled, we come to a well wooded country; the Oak, Birch, Ash, and Lime grow in abundance, though, singularly enough, the Fir from which Denmark is said to derive its name, is nowhere to be seen, unless, where it has been artificially planted. But the greatest ornament of the country is the Beech, which grows here to almost unrivalled size and beauty, now scattered about in groups of two, or three dozen, now falling into rich masses of extensive woodland or fringing the shores of the beautiful little bays or fjords encircling some fairy lake, or forming a superb setting to some emerald gem of a meadow." Again the Penny Cyclopædia gives a similar description in a more concise form. "The eastern part of the province is an elevated hilly country, with many beautiful little lakes, numerous woods, pleasant villages, and pretty towns, and it abounds in picturesque scenery. The central part is a sandy barren tract, full of heaths and moors; the western part is low and level, and protected by dykes against the encroachments of the sea. The country is on the whole fertile. especially on the German Ocean and the Elbe, and the western parts have of late years been rendered almost equal to the marshlands by the use of marl." The Heath-sand however, forms a very remarkable exception to the general beauty and fertility of the country. Professor Forchhammer says, it "forms in the Duchies, and still more in Jutland these miserable heath plains, from which rises no prominent object to engage the eye of a spectator, except perchance, the solitary barrow of a hunter or a warrior slain a thousand years ago, or the lone hut of some poor wretch, whose necessity compels him to depend for subsistence on this miserable soil. It is the most barren soil with which I am acquainted, for even the sand of the dunes, or the gravel of the sea beach, contain more materials fitted for the nutrition of plants."

---

* "Beitrage zur Land und Forstwirthschaftlichen Statistik der Herzogthumer Schleswig and Holstein.

From the above sketches, which are by no means over-drawn, you will perceive that a great part of Holstein is exceedingly beautiful, and every Briton who visits it, must be forcibly struck with its great similiarity to many parts of England. In fact, part of Schleswig is called "Angeln," (the land of the Angles), and is, really a sort of "old England," in its topographical features, and in the language and appearance of its inhabitants. The celebrated traveller Dr Clark remarks on this point, "we were surprized at the number of English faces we met, and resemblance is not confined to features. Many articles of dress, and many customs are common to the two countries. The method of cultivating and dividing the land is the same in both. The meadows bounded by quickset hedges, or by fences, made of intertwisted boughs, reminded us of Kent, Surrey, and Sussex. The natural appearance of the country is also like the South of England, being diversified by numerous hills and valleys, adorned with flourishing woods and fertile fields." And for my own part, had it not been for the German language, and some of the more primitive customs and costumes, I might constantly have supposed myself botanizing in England, surrounded, as I was, by all the features of an English landscape. In some of the Frisian Islands, (*e.g.*, Amrum, which lies geographically nearest to England), many words are almost the same as our own. Take, for instance, the irregular verbs. Think, thought, are in Frisian *theenk, thought*; bring, brought, are *bring, broaght* The English, How many miles? strongly resembles, in sound at least, its Amrum analogue, *Hu mani mile*? The similarity has actually given rise to a proverb—

"Butter, bread, and green cheese Is good English and good Friese."	'Buwter, bread in greene tzies Is guth Inglish in guth Friesch.'

The similarity between the two languages is, however, more striking to the ear than to the eye. From the catalogue I have here made of the Flora of Holstein, I find that out of a total of 1290 species, no less than 1062, or comparatively nearly the whole, are British, and this of course corroborates still more the resemblance already traced. And yet this country is comparatively unknown to and unheeded by British tourists and naturalists. Certain parts only of the continent seem to be the favourite scene of an Englishman's run, particularly Switzerland and the Rhine, while other localities as interesting and as lovely, are passed unnoticed. Holstein, moreover, is of very easy access from Leith, London, or Hull; but though numbers of our countrymen annually visit Hamburg, it is only *en route* to Berlin or Vienna.

But to return from a very wide digression. My head-quarters were situated in the most sterile of the four great belts already spoken of, viz, the Sand-Heaths; but within a circle of ten or fifteen miles, I had types of all the chief formations of Holstein. Round Pinneberg and Rissen there are large patches of the Boulder Sand; round Altona, at Schenefeld and Blankenese, the Boulder Clay is characteristically exhibited; at Blankenese and Schulau occur small patches of the Brown Coal; and on the Banks of the Elbe, beginning at Wedel, and attainings a breadth of ten miles, occur the celebrated marshes, already so often mentioned. With this considerable variety of soil, I found a corresponding variety of the plants growing on it. The banks of the Elbe, between Altona and Wedel, a distance of twelve or fifteen miles, consist of a ridge of gravel hills (of the Boulder Sand formation) rising abruptly from the river, and these, when covered with wood, have a very picturesque effect; so much so, that the fishing hamlet of Blankenese reminded me strongly of some of the most romantic villages on the Rhine. The highest points of this ridge are dignified by the name of Heights

(*Anhohen*,) and are crowned with restaurants and tea-gardens—favourite places of resort for the "Cockneys" of Hamburg. Such are the *Kæsterberg* and *Sulberg* at Blankenese. The little hamlet of Rissen is almost buried among an extensive tract of shifting sand dunes, at a distance of two or three miles from the Elbe side, all which the "oldest inhabitant," reports were blown up from the river, during a violent gale, in *one* night. I was surprised to find the Holsatians at least a century behind us in point of agriculture, their farm-houses being merely huge thatched barns, comprising dwelling-house, stable, byre, granary, bothy, and general storehouse under one roof, and their implements and usages being equally primitive. There does not exist in Holstein a single thrashing mill, the flail being the universal substitute, but the gentleman with whom I was living, a Scotch settler there, intended introducing one, and had already introduced a great number of our ordinary agricultural implements, to the great astonishment of the natives, who were at first inclined to attribute their remarkable effects to superhuman agency. Their eyes are now being opened, however, by seeing that this gentleman's estate is by far the best cultivated and most productive in the neighbourhood. I may also take this opportunity of mentioning that many of the improvements on the Elbe, in the way of planting trees, establishing orchards, &c., have been introduced by Scotchmen. Land, I am told, is here very cheap, and there is plenty of room for a certain amount of enterprising colonisation. A good farming establishment, with a hundred acres of land, may be bought for about £1000. The consequence of this cheapness is, that the farmers are mostly at the same time proprietors, and even the *Bauers* (or peasant labourers) can generally boast of a small piece of ground. The excellent markets of Hamburg, Altona, Kiel, and Lubeck, &c., might contribute to make Holstein an excellent speculation for Scotch agricultural enterprise, and it has the advantage of not being so distant as Port-Natal, or even Gothland.

Adverting now to the more immediate object of my communication, I have already said that I was enabled to examine personally but a small portion of the Duchy. But since I returned from my excursion, I have consulted the very few topographical botanical works pertaining to the subject I could find in our metropolitan libraries, to ascertain what plants were by them enumerated as occurring in Holstein, with a view to make out a catalogue of them, so far as practicable. Of course, if there were any accessible list already published of the Flora of Holstein, this would have been a waste of time on my part, but I am not aware of any such. The books referred to were "Koch's Synopsis Floræ Germanicæ," "Hornemann's Flora Danica," and "Sickmann's Enumeratio Stirpium Phanerogamicarum circa Hamburgum sponte crescentium." Besides these authorities, I found a considerable number of specimens from the immediate vicinity of Hamburg, in the Botanical Society's Herbarium. On these aggregate data the catalogue has been framed, professedly incomplete, as it is but co-extensive with my information, the authority for each plant being distinguished by initial letters. The plants are particularly noted which are foreign to Britain. With a view to generalise the catalogue as much as possible, I made a series of calculations to determine the proportion of species belonging to each natural order, and also the botanical geography of the Flora, with the following results. So far as my data have extended, the total number of species (including varieties) of the Phanerogamous plants and Ferns of Holstein amounts to 1290. Of these, 1062 are common also to Britain, while only the proportionally small number of 228 are foreign to Britain. The Dicotyledones constitute less than one-half of the whole; the Monocotyledons nearly one-fourth; and the Ferns and allied plants 1-35th

With regard to the natural orders, the

Compositæ	include	1-9th	Ranunculaceæ	include	1-40th
Gramineæ	...	1-11th	Juncaceæ	...	1-52d
Cyperaceæ	...	1-12th	Polygonaceæ	...	1-58th
Amentaceæ	...	1-36th	Labiatæ	...	1-25th
Chenopodeæ	...	1-46th	Umbelliferæ	...	1-30th
Potameæ	...	1-56th	Caryophyllaceæ		1-28th
Leguminosæ	...	1-21st	Scrophulariaceæ		1-41st
Cruciferæ	...	1-24th	Orchideæ	...	1-56th
Rosaceæ	..	1-24th			

As regards the habitats of the plants, of the 1290,

270 are Amphibious, i.e., grow on ground liable to periodic or irregular inundation, including plants growing on the Banks of Rivers, and in Fens and Bogs.
160 Wood and Forest plants.
146 Common on all meadows and pastures.
138 Common to Corn-fields and other cultivated grounds.
118 Aquatic, growing in stagnant or running water.
100 Peculiar to Rubbish heaps and waste grounds.
100 Which require the protection of Hedges and Thickets.
65 Littoral, i.e., peculiar to the sea coast.
72 Common on Roadsides.
50 Peculiar to the moors.
26 Which seem to prefer a calcareous soil.
20 Peculiar to old walls and rocks.
12 Peculiar to the Sand Dunes.
11 Parasitic.
2 Marine, i.e., growing under salt water.

1290.

From these Statistics, it may be seen that (as we should be led to expect from the nature of the soil) the Gramineæ, Cyperaceæ, Potameæ, and Junceæ predominate, along with the Compositæ, Leguminosæ, Cruciferæ, Rosaceæ, Umbelliferæ, Labiatæ, &c. I have also drawn up a list of the stations of the rarer plants of the Duchy, besides a short note of the plants there chiefly cultivated, adding to the whole the names of two or three of our common British plants, whose non-occurrence greatly surprised me, and which are not mentioned in any of the works already referred to as occurring in Holstein.

Analysis of the Plants mentioned in the Catalogue.

		Foreign.		British.	
Phanerogamous	Species,	212		1000	
	Varieties,	13	225	30	1030
Ferns …………	Species,	3		31	
	Varieties,	—	3	1	32
			228		1062
British, …………			1062		
Total,			1290		

Composed as follows :—

WATER PLANTS.	Species.
Salt.	
Marine plants, growing on the sea coast, under salt water,	2
Halophytes, or Littoral plants, growing in salt marshes, &c.,	65
Fresh.	
Aquatic plants, growing *in* the stagnant or running water of ponds, canals, streams, &c., … … … …	118
Semi-aquatic, or amphibious plants, growing on ground liable to inundations; including Fluviatile, or those growing on the banks of rivers; marsh and bog plants, &c.,	270
	455

LAND PLANTS.	
Sand plants, peculiar to sand dunes, &c., … …	12
Chalk plants, preferring calcareous soils, … …	26
Meadow and pasture plants, growing on moist and grassy, or dry and sandy pastures, &c., … … …	146
Field plants, growing in corn fields and other cultivated grounds, … … … … … …	138
Rock plants, peculiar to rocks, old walls, ruins, &c., …	20
Plants preferring rubbish heaps, waste grounds, &c., …	100
Heath or moor plants, … … … … …	50
Roadside plants, … … … … … …	72
Hedge plants, … … … … … …	100
Forest plants, … … … … … …	160
Parasitic plants, … … … … … …	11
Total, …	1290

The plants chiefly cultivated in Holstein are :—

Secale cereale.—Very extensively cultivated, especially on the light spongy soil of the middle belt (or Sandy-Heath) of Holstein. Nearly all the bread, (and *all* the home-baked bread) consists of rye.

Hordeum vulgare, hexastichon, and distichon.

Avena sativa.—Both barley and oats seemed to me greatly inferior to our own in size and heaviness of head.

Triticum vulgare and spelta.

Solanum tuberosum—Seem to grow excellently in the spongy soil of Holstein. The disease had uniformly attacked them however in August, but did not equally affect the "Earlies" and "Lates," for the "Earlies" being just about ripe were scarcely deteriorated, while the "Lates" proved a "dead loss." Diseased fields could be distinguished at a considerable distance by a peculiar disagreeable musty smell.

Fagopyrum esculentum—Is the grain chiefly cultivated round Schenefeld, and is exceedingly well adapted to the light gravelly soil of a great portion of Holstein. It is a very beautiful crop when in flower, but its heavy heads render it very liable to damage from winds; indeed, in the middle of August, considerable damage was suffered by this and other crops in Holstein from a series of gales, which I find were equally severe in Britain at the same time.

Fagopyrum Tartaricum.

Zea Mais —
Panicum Miliaceum — } Neither of these seem to be much cultivated in Holstein, but I have seen them in abundance in South Germany.

Pyrus Malus—P. communis —Apples and Pears are very plentiful and cheap, but not of very fine quality.

Cerasus Avium—C. vulgaris—Very abundant, and during my visit were cheaper than Potatoes—greatly used in the making of soups, and in some parts of Germany, in the manufacture of a liqueur called "*Kirschenwasser*."

Cydonia vulgaris—Prunus domestica.
Armeniaca vulgaris—Persica vulgaris.
Morus nigra—Juglans regia.

Vitis vinifera—Very sparingly cultivated so far north, and attains no great perfection, even when trained as an ornamental climber.

Ribes rubrum—Grossularia and nigrum.
Fragaria vesca—Raphanus sativus.
Cucumis Melo and sativus
Brassica oleracea—Rapa—Napus.
Sinapis nigra—Alba—Pisum sativum.
Phaseolus vulgaris—Faba vulgaris.
Ervum Lens—Spinacia oleracea.
Beta vulgaris—Cucurbita Pepo.
Carum carui—Daucus carota
Humulus Lupulus—Linum usitatissimum.
Cannabis sativus—Trifolium pratense—repens.
Vicia sativa—Medicago sativa.
Lolium perenne—Cichorium Intybus.

Spergula arvensis—Is considerably cultivated: the small black seeds, separated by the flail, being used for feeding cattle.

Mangol wurzel.

The following trees also: —

Æsculus Hippocastanum—An oriental tree now extensively planted.

Acer Pseudoplatanus—Acer platanoides
Pinus Larix—P. Picea. P. abies. P. sylvestris.

The usual cultivated varieties of

Oak—Elm—Poplar—Yew—Lime—Sycamore.
Lime—Sloe—Buckthorn—Alder—Beech—Willow.
Hawthorn—Birch—Sweet Chestnut—Hazel—Hornbeam.

REECE (R.M.)
1827

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE
LIBRARY
-4 FEB 1949